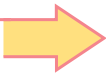


# 67 What Would You Do?



**N**ew tests are being developed for genetic conditions as scientists learn more about the genes that cause them. These tests will help people plan their lives, as well as lead to actions that help prevent some conditions from having serious effects. But these new tests also raise issues for individuals and for society.

## CHALLENGE



**How do individuals and society react to the issues raised by genetic testing?**

### MATERIALS



*For each student*

- 1 Student Sheet 67.1, "Discussion Web: Should Joe Be Tested?"



## PROCEDURE

1. Review the table of advantages and disadvantages you recorded in your science notebook for Activity 56, “Joe’s Dilemma.”
2. Read the e-mail below from Joe to his friend Megan.
3. Add to your table from Activity 56, “Joe’s Dilemma,” any advantages and disadvantages of being tested that you learn from the reading.

## READING

to: meganR@talk.com

from: joeF@email.com

Megan—

*I've learned more from the doctor and genetic counselor about this condition I might have. The Marfan syndrome is dominant—it's caused by a single mutated allele of a gene that affects connective tissue. Connective tissue is found in joints, the lens of the eye, the aorta—in other words, all over your body.*

*But having the Marfan syndrome doesn't mean that all those parts will be affected. I might still have the condition even though I have only some of the symptoms. The doctors started to figure this out after my mom died and my cousin Amber developed some problems with her eyes. Now they suspect that my grandfather, my uncle, and my cousin might have the Marfan syndrome. My grandfather and uncle are healthy so far, like me. The only way they can be sure if we have the Marfan syndrome is to test our genes. Dr. Foster says it's important to know if I have it so we know how closely to monitor my heart.*

*Because the Marfan syndrome can be caused by many different mutations in this gene, scientists can't test for just one Marfan mutation. They have to check to see if I inherited the mutated allele that runs in my family. They will compare my DNA to DNA from my grandfather, uncle, cousin, and other family members who do not have the Marfan syndrome. This test will let me know for sure if I have the Marfan gene that my mother had.*

## Activity 67 • What Would You Do?

*My dad still doesn't want me to be tested. He's worried people will treat me differently, or that he won't be able to get health insurance for me. Dr. Chee, my genetic counselor, said that can be a problem. She thinks more laws will be passed to prevent genetic discrimination. But, right now, we aren't sure if the legal system will protect me.*

*If the test is positive, I will probably have to quit playing soccer. We were hoping I'd get a soccer scholarship to college—Coach thinks there's a good chance I could. But I've been doing some reading. If you have the Marfan syndrome they keep a close watch on your heart. They can even do surgery if you develop serious heart problems. The doctor says I can probably live to a healthy old age, even if I do have this condition, as long as I take the right precautions.*

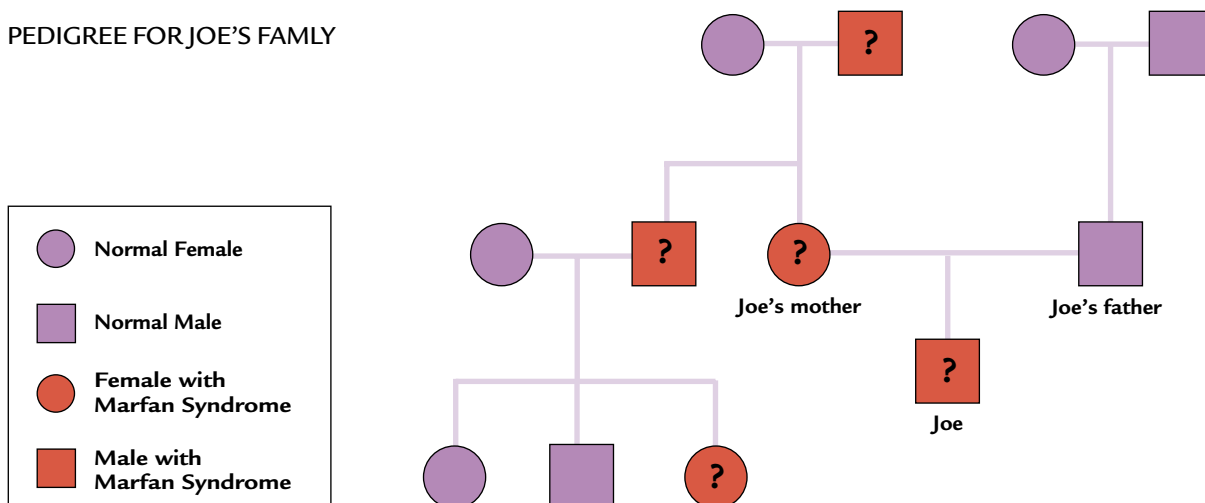
*What do you think I should do, Megan?*



Joe

## ANALYSIS

1. Joe's family pedigree is shown below. How would a genetic counselor answer the following questions?
  - a. If Joe has the Marfan syndrome, is he likely to be homozygous or heterozygous? Explain your answer.
  - b. If Joe has the Marfan syndrome and has a child someday, what is the probability that his child will have the Marfan syndrome? (Assume that the child's mother does not have the Marfan syndrome.) Make a Punnett square and explain your answer.

PEDIGREE FOR JOE'S FAMILY




-  2. The Marfan syndrome is a dominant trait. Write your own definition of *dominant trait* as it is used in genetics. Use evidence to explain whether the dominant trait is always the most common trait in a human population.
-  3. Pretend that you are Joe's friend. Write a letter to Joe telling him whether you think he should be tested.

**Hint:** To write a complete answer, first state your opinion. Provide two or more pieces of evidence that support your opinion. Then consider all sides of the issue and identify the trade-offs of your decision.



## EXTENSION

-  For links to more information on genetic conditions, go to the *Issues and Life Science* page of the SEPUP website. Use the website as a starting point to research issues related to genetic conditions and genetic testing.